

**Novitates gabonenses 9.**  
**Notes on *Bonamia* (*Convolvulaceae*)**  
**in Central Africa with emphasis on Gabon**

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**Summary :** The revision of *Bonamia* (*Convolvulaceae*) for Zaïre by LEJOLY & LISOWSKI is reviewed in connection with the presence of the genus in Gabon. Their conclusion that the Ghanaese *Bonamia vignei* is present in Zaïre could not be confirmed. Consequently 3 new species are described : *B. gabonensis*, *B. longitubulosa*, and *B. nzabii*. *Bonamia vignei* remains, at least for the time being, an endemic species of Ghana.

**Résumé :** Le travail de LEJOLY & LISOWSKI sur le genre *Bonamia* (*Convolvulaceae*) au Zaïre est revu en liaison avec l'existence de ce genre au Gabon. La présence au Zaïre de l'espèce ghanéenne, *Bonamia vignei*, n'est pas confirmée. Trois nouvelles espèces sont décrites : *B. gabonensis*, *B. longitubulosa* et *B. nzabii*. *Bonamia vignei* demeure, pour l'instant, une espèce endémique du Ghana.

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The genus *Bonamia* Thouars of the *Convolvulaceae* has been revised worldwide by MYINT & WARD in 1968. It has also been treated in the floras of West Tropical Africa (HEINE, 1963), Tropical East Africa (VERDCOURT, 1963) and Zambesiaca (GONÇALVES, 1987). LEJOLY & LISOWSKI reviewed it rather recently (1982) in the course of the treatment of the *Convolvulaceae* for the Flore d'Afrique Centrale.

According to MYINT & WARD (*l.c.*) the genus is represented in continental Africa by 5 species : *B. mossambicensis* (Klotzsch) Hallier f., *B. spectabilis* (Choisy) Hallier f., *B. thunbergiana* (R. & S.) Williams, *B. velutina* Verdc., and by a fifth, little known, species *B. sedderoides* Rendle from Angola. Only *B. spectabilis* also occurs on Madagascar, the other 4 species are confined to the continent. A sixth species described from Ghana by HOYLE (1934) as *B. vignei* and treated by HEINE (*l.c.*) together with the only other species of West Africa *B. thunbergiana* (Roem. & Schult.) F. N. Williams, is treated by MYINT & WARD (*l.c.* : 233) as doubtful because HOYLE described the sepals as accrescent in fruit, a character seen in *Calycolobus* but not in *Bonamia*. However, MYINT & WARD did not consult the type nor any other material of *B. vignei*.

LEJOLY & LISOWSKI (*l.c.*) concluded that *B. vignei* and *B. spectabilis* are the only species of *Bonamia* in Zaïre and identified the material from that country accordingly. They observed correctly that the sepals of *B. vignei* are not distinctly accrescent in fruit and consequently concluded that this species belongs in *Bonamia*.

Attempts to identify Gabonese collections of this genus with the treatment of LEJOLY & LISOWSKI (*l.c.*) failed. The Gabonese specimens all keyed out as *Bonamia vignei*, but were too heterogenous to be accepted as representing a single species. Study of material from Zaïre revealed the presence of two new species, both different from *B. vignei*, and the absence of the latter in Central Africa. The new species are here described as *B. longitubulosa* and *B. nzabii*. They are confined to Central Africa : *B. longitubulosa* to Central Zaïre and the Central African Republic, *B. nzabii* to Western Zaïre and Gabon. A remaining collection from Gabon and a few from Congo, however, still did not fit in. They were certainly allied to *B. vignei* from Ghana, but showed such strong distinctive characters that it has been decided to describe them as a third new species named *B. gabonensis*.

***Bonamia gabonensis* Breteler, *sp. nov.* — Fig. 1; Map 1.**

*Bonamia vignei* Hoyle *affinis a qua ramis non glabrescentibus, foliis basi cordatis et subtus persistente tomentosis, antheris brevioribus et stigmatibus minoribus imprimis differt.*

TYPE : *Breteler 6908*, Gabon, ca. 60 km SSW of Moanda, alt. ca. 700 m, fl. Oct. (holo-, WAG; iso-, BR, LBV, P).

Liana. Branchlets densely brown-tomentose. Leaves : petiole 3-7 mm long; blade papyraceous, obovate-elliptic, to sometimes ovate-elliptic, 8-15 × 3-6 cm, cordate at base, 0.5-1.5 cm long acuminate and mucronate at apex, with 7-11 main lateral nerves on each side of the midrib, ± impressed above, ± prominent beneath; glabrous above except for some remnants of indumentum on the impressed midrib, persistently brown-tomentose beneath, more densely so on midrib and main laterals.

Inflorescence a terminal or subterminal, densely brown-tomentose thyrse, often together with distinctly stalked cymes mostly in the upper leaf axils; peduncle of separate cymes up to 15 mm long; bracts and bracteoles ovate to obovate-elliptic, up to 7 × 3 mm, folded lengthwise. Pedicel 1.5-2 mm long, hairy as calyx. Sepals free, subequal in length, suborbicular to broadly elliptic to obovate, 6-6.5 × 5-6 mm, concave, brown-tomentose outside, glabrous inside, top obtuse to acute, the inner with almost hyaline lateral margins; corolla narrowly campanulate, 9-10 mm long, 2-4 mm wide, appressed golden-brown hairy outside (glabrous at base) inside brown-hairy in zone between top of ovary and lobes, the latter suberect to slightly spreading, 4-5 mm long, rounded to acute at apex; stamens as long as corolla or slightly longer or slightly shorter, united with corolla tube almost till lobes, hairy in same zone as corolla tube; anthers versatile, ellipsoid, 1.5 × 1 mm; pistil as long as corolla, glabrous; styles subequal in length, united at base for 1-2 mm; stigmas capitate, rounded-reniform, deeply cordate or not, ca. 0.5 mm in diam., ovary conical, 1-1.5 mm long; disc rim-like to slightly cupular, glabrous.

Fruits shortly conical, apiculate, brown, glabrous, 10-15 mm long, ca. 8 mm in diam., 1-3(-4?)-seeded; pericarp dehiscent from base by several slits. Seed orange-red, subellipsoid ca. 6 × 5 mm; seedcoat muriculate with a thin perisperm; placenta 2-horned, black.

DISTRIBUTION AND ECOLOGY : Gabon, Congo. Forest or forest edge, alt. up to ca. 700 m.

SPECIMENS EXAMINED. — GABON : 60 km SSW of Moanda, fl. Oct., *Breteler 6908* (BR, LBV, P, WAG, type). — CONGO : km 39 on Komono-Mossendjo Rd, fr. Jan., *Moutsambote 3564* (IEC); Lebayi Region, fl. Nov., *Sita 4720* (BR, IEC).

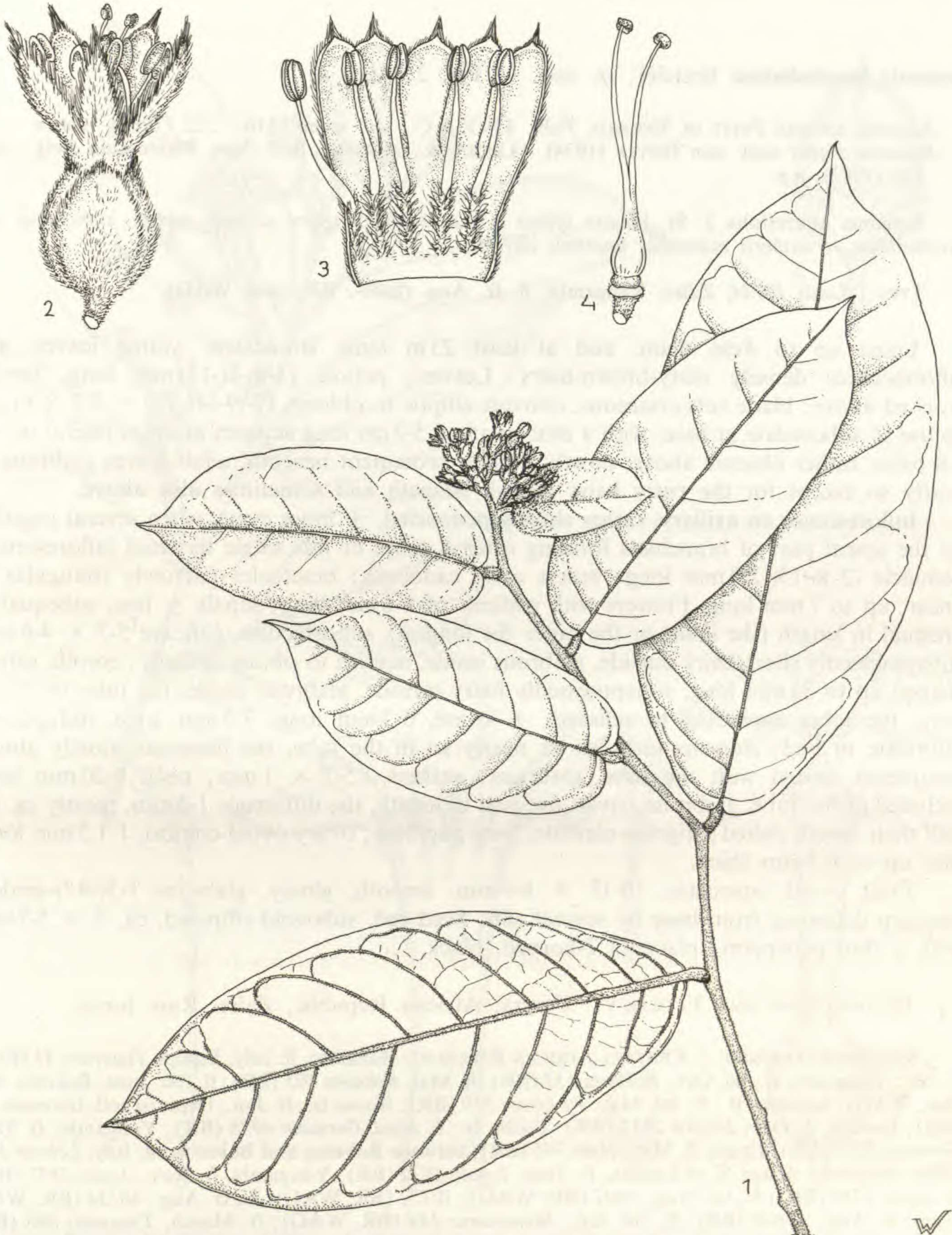


Fig. 1. — *Bonamia gabonensis* Breteler : 1, flowering branch  $\times 2/3$ ; 2, flower  $\times 3$ ; 3, open corolla with stamens  $\times 3$ ; 4, pistil  $\times 3$ . (Breteler 6908). Drawing by W. WESSEL-BRAND.

**Bonamia longitubulosa** Breteler, *sp. nov.* — Fig. 2; Map 1.

- *Bonamia lebrunii* PETIT ex EVRARD, Publ. I.N.E.A.C., sér. scient. 110 : 252 (1968), *nomen*.  
— *Bonamia vignei* auct. non HOYLE (1934) : LEJOLY & LISOWSKI, Bull. Nat. Plantentuin Belg., 52 : 134 (1982), *p.p.*

*Bonamia alternifolia* J. St. Hilaire *affinis a qua corolla longiore et intus glabra, staminibus non excedentibus et antheris minoribus imprimis differt.*

TYPE : *Louis 10734*, Zaïre, Yangambi, fl. fr. Aug. (holo-, BR; iso-, WAG).

Liana up to 4 cm diam. and at least 25 m long. Branchlets, young leaves, and inflorescences densely rusty-brown-hairy. Leaves : petiole (3-)6-8(-12) mm long, mostly grooved above; blade subcoriaceous, obovate-elliptic to oblong, (7-)9-11(-12) × 2.5-5(-6) cm, obtuse to subcordate at base, with a mucronate, 0.5-2 cm long acumen at apex, lateral nerves 6-8 pairs, rather obscure above, mostly slightly prominent beneath, adult leaves glabrous or nearly so except for the rusty hairy midrib beneath and sometimes also above.

Inflorescence an axillary, rather shortly peduncled, ± loose cyme, when several together on the apical part of branchlets forming often a more or less single terminal inflorescence; peduncle (2-)6-15(-22) mm long; bracts early caducous; bracteoles narrowly triangular to linear, up to 7 mm long. Flowers with pedicels of 4-6 mm long; sepals ± free, subequal to unequal in length (the inner or the outer the longest), suborbicular, concave 5-7 × 4-6 mm, subappressedly short-hairy outside, glabrous inside, acutish to obtuse apically; corolla salver-shaped up to 31 mm long, subappressedly hairy outside, glabrous inside, the tube 14-24 mm long, the lobes spreading to reflexed, ± ovate, 5-7 mm long, 3-5 mm wide, induplicate-imbricate in bud; stamens included or nearly so in the tube, the filaments mostly almost completely united with the tube, glabrous; anthers 1.5-2 × 1 mm; pistil 8-20 mm long, included in the tube, glabrous; styles unequal in length, the difference 1-3 mm, mostly ca. for half their length united; stigmas capitate, long-papillate; ovary ovoid-conical, 1-1.5 mm long; disc up to 0.5 mm thick.

Fruit ovoid, apiculate, 10-12 × 8-9 mm, smooth, glossy, glabrous 1-3(-4?)-seeded; pericarp dehiscent from base by several slits. Seed red, subovoid-ellipsoid, ca. 7 × 5-7 mm, with a thin perisperm; placenta 2-horned, black.

DISTRIBUTION AND ECOLOGY : Central African Republic, Zaïre. Rain forest.

SPECIMENS EXAMINED. — CENTRAL AFRICAN REPUBLIC : Boukoko, fl. July, *Equipe Tisserant 41* (P). — ZAÏRE : Yangambi, fl., bd. Oct., *Bokuma 153* (BR); fl. Mai, *Bokuma 705* (BR); fl., bd. June, *Bokuma 1033* (BR, WAG); Kelembe R., fl., bd. May, *De Graer 859* (BR); Boosa Is., fr. Jan., Denis in coll. *Germain 477* (BR); Isandja, fl. Oct., *Evrard 2852* (BR); Esobo Is., fl. June, *Germain 4938* (BR); Yangambi, fr. Dec., *Germain 8257* (BR); Epulu, fl. May, *Hart 745* (BR); between Bokuma and Bokatola, fl. July, *Lebrun 1336* (BR); Maniéma, 45 km N. of Lubutu, fr. June, *Lejoly 1639* (BR); Yangambi, fr. Nov., *Louis 2835* (BR); fl. April, *3748* (BR); fl., bd. Aug., *5847* (BR, WAG); *10721* (BR, WAG); fl., fr. Aug., *10734* (BR, WAG, type); fr. Aug., *15839* (BR); fl., bd. Jan., *Menavanza 144* (BR, WAG); fr. March, *Toussaint 888* (BR).

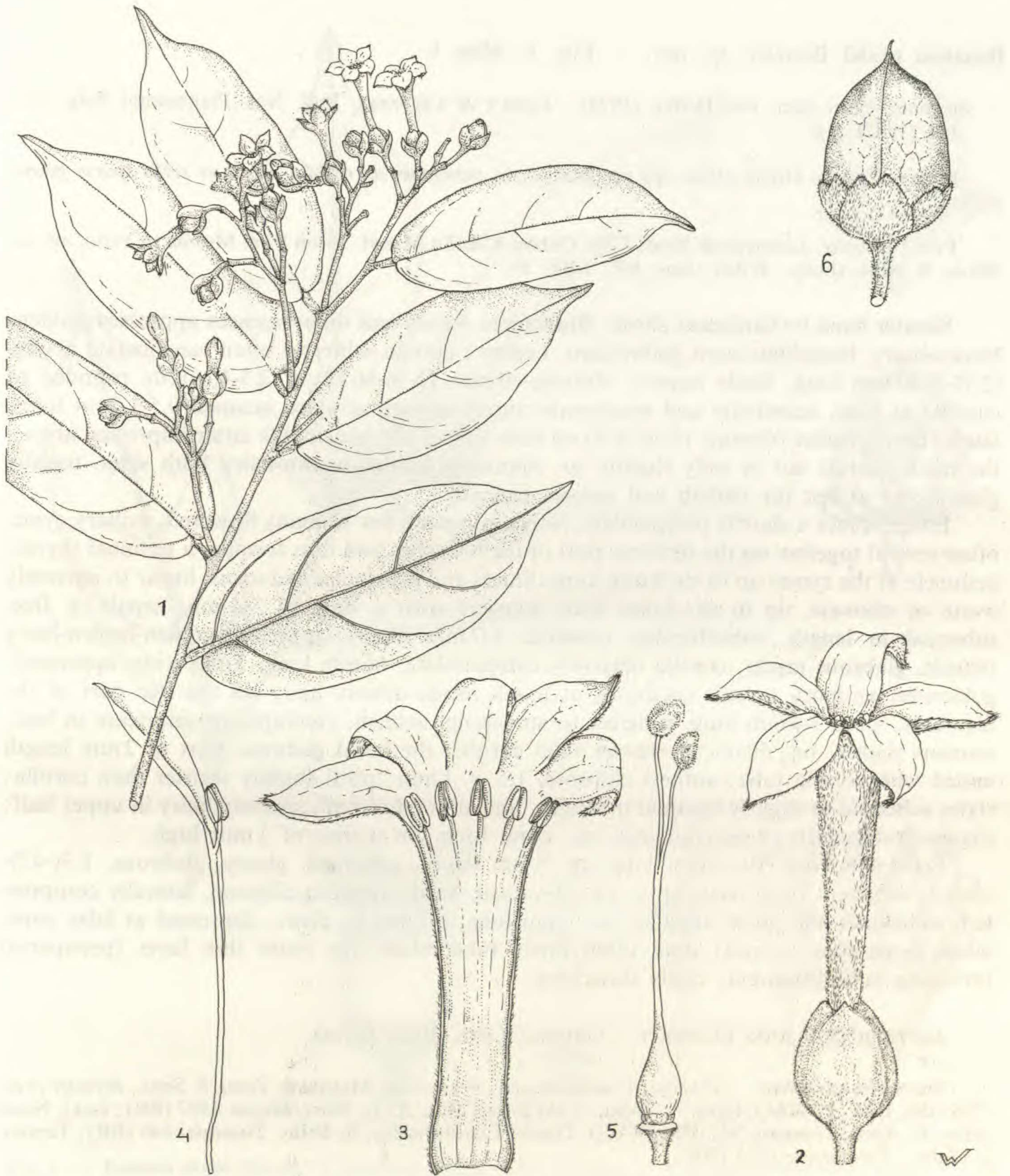


Fig. 2. — *Bonamia longitubulosa* Breteler : 1, flowering branch  $\times 2/3$ ; 2, flower  $\times 3$ ; 3, open corolla with stamens  $\times 3$ ; 4, detail showing fusion of corolla and filament  $\times 3$ ; 5, pistil  $\times 3$ ; 6, fruit  $\times 2$ . (1, *Lebrun 1336*; 2-5, *Louis 3748*; 6, *Louis 10.734*). Drawing by W. WESSEL-BRAND.

**Bonamia nzabii** Breteler, *sp. nov.* — Fig. 3; Map 1.

— *Bonamia vignei* auct. non HOYLE (1934) : LEJOLY & LISOWSKI, Bull. Nat. Plantentuin Belg. 52 : 134 (1982), *p.p.*

*Bonamia vignei* Hoyle *affinis sed partibus pilosis staminum ab corolla liberis et stylis sparse pilosis differt.*

TYPE : Breteler, Lemmens & Nzabi 7799, Gabon, Chaillu Massif, 36 km from Mouila to Yeno, alt. ca. 300 m, fl. Sept. (holo-, WAG; iso-, BR, LBV, P).

Slender liana or lianescent shrub. Branchlets, leaves and inflorescences appressed-golden-brown-hairy, branchlets soon glabrescent. Leaves : petiole subterete often canaliculate above, (2-)3-5(-6) mm long; blade papery, obovate-elliptic, (5-)6-8(-12) × 2.5-4(-6) cm, rounded to cuneate at base, acuminate and mucronate, rarely acutish at apex, acumens 0.5-1.5 cm long; lateral nerves rather obscure, (5-)6-7(-8) on each side of the midrib, the latter impressed above, the main laterals not or only slightly so; appressed-golden-brown-hairy both sides, usually glabrescent except for midrib and petiole beneath.

Inflorescence a shortly pedunculate, rather compact, few to many flowered, axillary cyme, often several together on the terminal part of the branches and thus forming a terminal thyrse; peduncle of the cymes up to ca. 6 mm long; bracts and bracteoles caducous, linear to narrowly ovate or obovate, up to ca. 8 mm long. Flowers with a stalk of 2-4 mm; sepals ± free, subequal in length, suborbicular, concave, 5-7 mm diam., appressed-golden-brown-hairy outside, glabrous inside; corolla narrowly campanulate, 10 mm long, 2 mm wide, appressed-golden-brown-hairy outside (glabrous at base), inside mainly hairy on the free part of the filaments, lobes 3-4 mm long, suberect to spreading, acutish, conduplicate-imbricate in bud; stamens slightly but distinctly shorter than corolla, the basal glabrous part of 2 mm length united with corolla tube; anthers ellipsoid, 1.5 × 1 mm; pistil slightly shorter than corolla; styles subequal to slightly unequal in length, united in basal half, sparsely hairy in upper half; stigmas subcapitate; ovary conical, ca. 1 mm long, on a disc of 1 mm high.

Fruit subovoid, 10-12 mm long, ca. 8 mm diam., apiculate, glossy, glabrous, 1-3(-4?)-seeded, dehiscent from base, up to ca. 12-valved. Seed subovoid-ellipsoid, laterally compressed, sometimes somewhat angular, ca. 7 mm long, 5-7 mm in diam., depressed at hilar zone, hilum horse-shoe shaped; testa often finely tuberculate, the outer thin layer (perisperm) becoming subtransparent, easily detaching.

DISTRIBUTION AND ECOLOGY : Gabon, Zaïre. Rain forest.

SPECIMENS EXAMINED. — GABON : Chaillu Massif, 36 km from Mouila to Yeno, fl. Sept., Breteler *et al.* 7799 (BR, LBV, P, WAG, type). — ZAÏRE : Luki Forest Res., fl., fr. Nov., Breyne 3807 (BR); Luki, Ntosi valley, fr. April, Toussaint 343 (BR, WAG); Gimbi, Lukulu valley, fr. Febr., Toussaint 840 (BR); Temvo, fr. Febr., Vermoesen 1552 (BR).

The three new species together with *B. vignei* are related to the type species of *Bonamia*, *B. alternifolia* J. St. Hilaire (1805) from Madagascar. The leaves are very similar, and the inflorescences are in all species subterminal. Also the tubular, distinctly lobed corollas suggest



Fig. 3. — *Bonamia nzabii* Breteler : 1, flowering branch  $\times 2/3$ ; 2, flower  $\times 3$ ; 3, open corolla with stamens  $\times 3$ ; 4, detail showing fusion of corolla and filament  $\times 3$ ; 5, pistil  $\times 3$ ; 6, dehiscent fruit  $\times 2$ ; 7, fruit inside showing 2-horned placenta  $\times 2$ . (1-5, *Breteler et al.* 7799; 6-7, *Toussaint* 840). Drawing by W. WESSEL-BRAND.

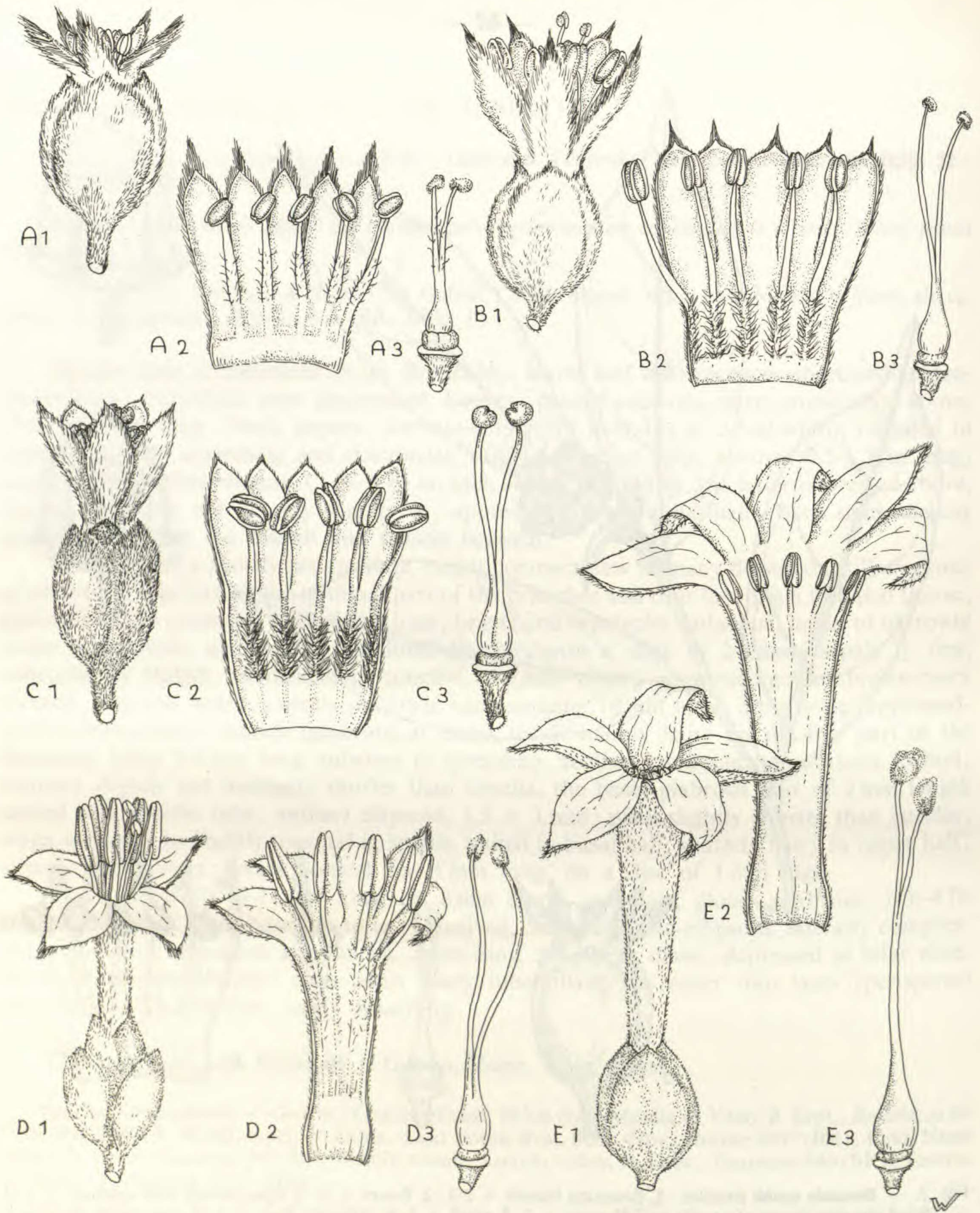
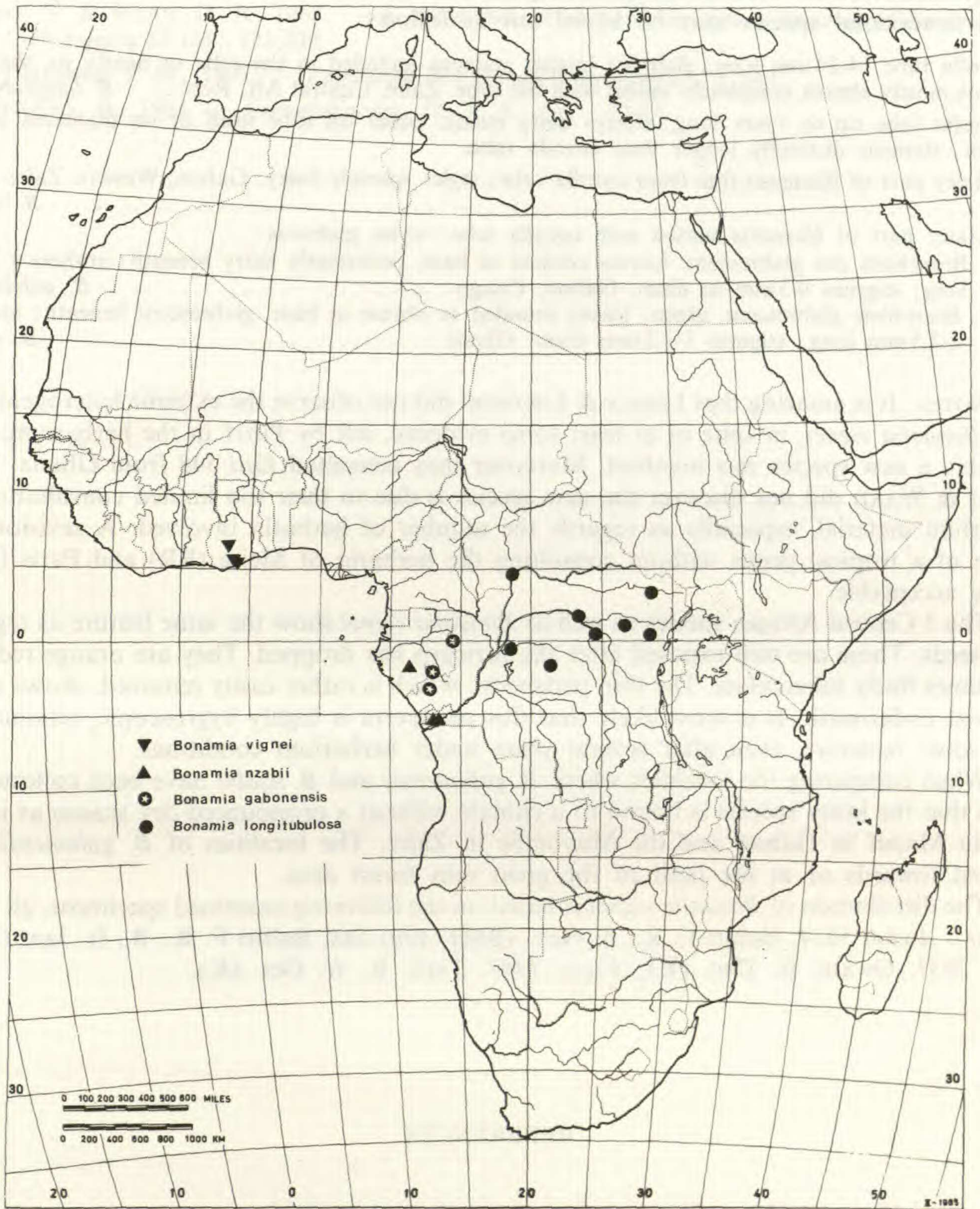


Fig. 4. — Flowers, open corollas with stamens and pistils compared. A1-A3, *Bonamia nzabii* Breteler; B1-B3, *Bonamia gabonensis* Breteler; C1-C3, *Bonamia vignei* Hoyle; D1-D3, *Bonamia alternifolia* J. St. Hilaire; E1-E3, *Bonamia longitubulosa* Breteler. All elements  $\times 3$ . (A1-A3, see Fig. 3; B1-B3, see Fig. 1; C1-C3, *Enti* 548; D1-D3, *Lam & Meeuse* 5548; E1-E3, see Fig. 2). Drawing by W. WESSEL-BRAND.





Map 1. — Distribution of 4 related continental species of *Bonamia*.

affinity. In fig. 4 the flowers of the 5 species are depicted. *B. alternifolia* can easily be distinguished from the continental species by the well exerted stamens with very long anthers. The 4 continental species may be keyed out as follows.

1. Corolla tube 14-24 mm long, glabrous inside; stamens included in the tube or nearly so, the filaments mostly almost completely united with the tube. Zaïre, Central Afr. Rep. . . . . *B. longitubulosa*
- 1'. Corolla tube up to 7 mm long, always hairy inside, either on tube itself or on filaments or on both; stamens distinctly longer than corolla tube.
  2. Hairy part of filaments free from corolla tube; styles sparsely hairy. Gabon, Western Zaïre. . . . . *B. nzabii*
  - 2'. Hairy part of filaments united with corolla tube; styles glabrous.
    3. Branchlets not glabrescent. Leaves cordate at base, persistently hairy beneath; anthers 1.5 mm long; stigmas 0.5 mm in diam. Gabon, Congo . . . . . *B. gabonensis*
    - 3'. Branchlets glabrescent, green; leaves rounded to obtuse at base, glabrescent beneath; anthers 2-2.5 mm long; stigmas 1-1.2 mm diam. Ghana . . . . . *B. vignei*

NOTES : It is amazing that LEJOLY & LISOWSKI did not observe the extreme heterogeneity of their *Bonamia vignei*, in spite of at least some evidence, left by PETIT in the herbarium, that probably a new species was involved. Moreover they consulted *Enti 548* from Ghana. That MYINT & WARD did not discover the new species is due to their too limited consultation of herbarium material, especially as regards the number of herbaria involved. A revision for Africa of a tropical genus without consulting the herbaria of Meise (BR) and Paris (P) is hardly acceptable.

The 3 Central African species as well as *Bonamia vignei* show the same feature as regards their seeds. These are well exposed after the pericarp has dropped. They are orange-red and sometimes finely tuberculate. The thin perisperm, which is rather easily removed, shows a wet seedcoat underneath. It is most likely that this perisperm is highly hygroscopic, retaining at least some moisture, even after several years under herbarium conditions.

When comparing the localities where *B. gabonensis* and *B. nzabii* have been collected, it seems that the latter species is bound to a climate without a pronounced dry season as in the Chaillu Massif in Gabon and the Mayombe in Zaïre. The localities of *B. gabonensis* are situated towards or at the limit of the great rain forest area.

The distribution of *Bonamia vignei* is based on the following examined specimens, all from Ghana : *Andoh 5614*, Bobiri F. R., fl. Nov. (BM); *Enti 548*, Bobiri F. R., fl., fr. Jan. (BR); *Lyon 2631*, Owabi, fr. Dec. (K); *Vigne 1387*, Tiasi, fl., fr. Oct. (K).

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